



Healthcare Industry Update

Tuesday, October 16th, 2018



THE ORIGIN RX

Happy Cannabis Eve!

Tomorrow, recreational cannabis will be legal for adult use in Canada. One day until a long prohibition will be over. In some Provinces (BC, Alberta, Ontario, Nova Scotia and NWT) consumption rules will look like cigarette smoking, where residents will be allowed to smoke on the sidewalk, in a park and in a hotel room but not in most closed public spaces like restaurants, schools, and recreation/sports complexes. The remaining provinces have adopted a more restrictive framework for consumption, generally allowing use in private residences only. Quebec's newly elected CAQ government promised to release their legal framework days after October 17, but have indicated that it will likely be more restrictive than what was previously released. Provincial and local governments are rolling out plans for bricks-and-mortar and online sales channels, as well as programs involving education and safety.

The 129 licensed producers as of today's date are scrambling to fill the supply chain, with shortfalls reported. Many continue to look at international markets as well.

Meanwhile, there are a number of producers focused on strategies to differentiate and rise above the fray of hundreds of brands, each looking for shelf space and market share. The race for intellectual property is on, in a business that currently lies somewhere at the intersection of generic drugs and agriculture.

For example, Canopy Growth announced yesterday the acquisition of assets of Colorado-based ebbu for US\$425 million in cash and stock, including milestones. Ebbu is an innovator in adult-use and medical cannabis, developing proprietary formulations of cannabinoids and terpenes for precise experiences, sensations or therapeutic effects. According to Canopy, ebbu's IP has application to their hemp and THC-rich cannabis genetic breeding program and cannabis-infused beverage capabilities, and has the potential to significantly reduce the cost of CBD production. And unique, proprietary products processes and uses may potentially be patentable, with 20 years of exclusivity from the issue date.

Other examples of moat-building efforts include CannTrust and VIVO, who have partnered with generic players Apotex and Pharmascience respectively. Pharmascience and VIVO recently announced their partnership to provide a line of specific, high-quality medical cannabis formulations with precise-dosage formats of medical cannabis with the intent of improving patient safety and efficacy. CannTrust and Apotex announced development of alternate dosage formats for medical cannabis products, including both quick release and sustained release formats for THC and CBD. Both are addressing the expectations of doctors and patients. If DINs are issued for resulting medications, they will be eligible for reimbursement.

Organigram took a different tack, making a strategic investment in Hyasynth Bio, a company working on genetically engineering cannabinoids and then patenting them. Yeast is then genetically modified with the cannabinoid gene for manufacture in big-batch processes, like insulin and human-serum albumin.

This is just a snapshot of LPs developing unique products and building moats using generic cannabis. There is lots more exciting innovation going on in API's, formulation and delivery. After all is said and done, despite the inevitable bumps in the road, legalization will bring the ability to carry out research, build data sets and improve product quality, consistency, dosage formats and safety - and that's a good thing.

CATHY STEINER, PRINCIPAL





BIGGEST MOVERS

Recent News¹

Markets have been relatively volatile in the last two weeks with the TSX decreasing 2.5% and the NASDAQ increasing by 12.2%. It's been a mixed bag in healthcare subsectors, which follow in this report. A selection of the largest share price movers in the healthcare space during the recent period is included below:

- **TerrAscend Corporation** (CNSX:TER +83%): TerrAscend is a vertically-integrated Canadian cannabis company. Recent share price appreciation was largely due to a couple of announcements by TerrAscend including a multi-year cannabis supply agreement with **PharmHouse Inc.**, a Canopy Rivers joint venture. Under the terms, PharmHouse will grow and supply cannabis to TerrAscend from its existing 1.3 million square facility in Leamington, Ontario. TerrAscend also entered into an agreement with **MCI Medical Clinics Inc.** last month under the wholly-owned subsidiary **Solace Health Network Inc.** to provide medical cannabis services
- **Corium International Inc.** (NasdaqCM:CORI +37%): Corium International is a commercial-stage biopharmaceutical company focused on the development, manufacturing and commercialization of specialty pharmaceutical products that treat Alzheimer's diseases. Recent share price appreciation was due to the announcement that **Gurnet Point Capital Limited** entered into a definitive merger agreement to acquire Corium for US\$575.8 million at \$12.50 per share in cash
- **Aurora Cannabis Inc.** (TSX:ACB +21%): Aurora Cannabis is a vertically integrated and horizontally diversified cannabis company. Recent share price appreciation was largely due to the announcement that Aurora has submitted an application to list on the New York Stock Exchange (NYSE) subject to listing and regulatory requirements
- **Vital Therapies, Inc.** (NasdaqGS:VTL +14%): Vital Therapies is a biotherapeutic company that focuses on developing and commercializing cell-based therapy for the treatment of acute forms of liver failure. Share price recently increased after Vital announced that it will explore strategic alternatives that may include a possible sale or merger under the advice from the newly hired Ladenburg Thalmann Financial Service
- **Aphria Inc.** (TSX:APH +12%): Aphria is a licensed global cannabis company producing dried cannabis and cannabis oil. Recent share price appreciation was due to rumoured discussions with Altria Inc., makers of Marlboro and other tobacco products of taking a potential stake in the company
- **Arbutus Biopharma Corporation** (NasdaqGS:ABUS -8%): Arbutus Biopharma is a biopharmaceutical company focused on the development and commercialization of chronic Hepatitis B virus (HBV) infection treatments. Recent share price decline was due to the announcement of a delay to the Phase 1 clinical trial HBV candidate AB-452
- **Momenta Pharmaceuticals Inc.** (NasdaqGS:MNTA -38%): Momenta Pharmaceuticals is a biotechnology company that develops therapeutics that treat rare, immune-mediated diseases. Recent share price decline was due to the announcement that Momenta will be cutting 110 positions, which represents half of its headcount and involves a shakeup of the executive team
- **Immune Design Corp.** (NasdaqGM:IMDZ -49%): Immune Design is a late-stage immunotherapy company that develops treatments for the immune system to fight cancer and other chronic diseases. Recent share price decline was due to the announcement that the firm will cease internal development of cancer vaccine CMB305 in order to focus its development activities on TLR4 agonist G100. Immune Design hopes to seek external partners to continue the development of CMB305

Note 1: For the period October 1st to October 15th, 2018

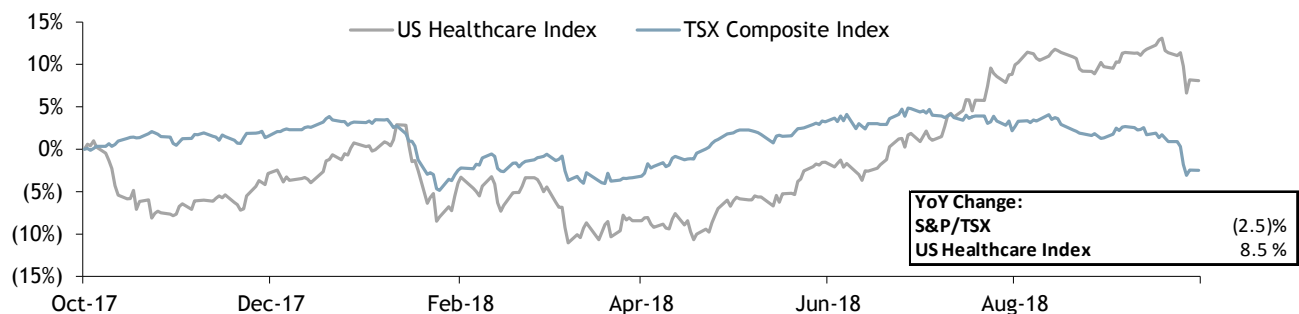


US HEALTHCARE WATCHLIST

News Scan¹

- The US Healthcare Watchlist Index gained approximately 8.5% over the last twelve months, while the TSX Composite Index decreased 2.5% over the same period. Some events making news this month:
- On October 15th, **OncoSec Medical**, a company that develops intratumoral cancer immunotherapies announced it has initiated a Phase 2 clinical trial for the treatment of its late-stage triple negative breast cancer treatment in combination with Merck’s Keytruda treatment
- On October 12th, **Merck** announced that it will exit the Lantus biosimilar market after failure to make significant progress since the FDA’s tentative approval last July. The company cancelled its development and commercialization agreement with **Samsung Bioepis** for the biosimilar insulin producer but will continue with biosimilar programs in oncology and immunology
- On October 11th, **TG Therapeutics** announced final results of its Phase 2 clinical of its glycoengineered anti-CD20 monoclonal antibody treatment for patients with relapsing form of Multiple Sclerosis
- On October 10th, **Roche** announced a new collaboration with **Ionis Pharmaceuticals** to develop IONIS-FB-L Rx, a RNA-targeted therapeutic of complement-mediated diseases. Under the agreement, IONS will receive an upfront payment of US\$75 million to conduct Phase 2 trial for the rare severe renal disorder, and up to US\$684 million in milestone & license fees, and royalties
 - On October 15th, Roche announced that it will begin the global commercial launch of three new next-generation sequencing AVENIO tumor tissue analysis kits, which detect all four mutation classes in solid tumours
- On October 9th, **Myriad Genetics** signed a commercialization plan with **Pfizer** aimed at promoting the use of its BRACAnalysis CDx test to identify suitable patients for treatment with Pfizer’s talazoparib. Under the plan, each company will be responsible for the commercialization of their respective products
- On October 3rd, **Boston Pharmaceuticals** announced it has entered into a licensing and equity deal with **Novartis** for global rights to three anti-infective candidates for the potential treatment of Gram-negative infections. Novartis is subject to receive an undisclosed upfront payment, milestones and royalties on net sales, as well as an equity stake in the two companies formed with Boston Pharma
- On October 2nd, **Johnson & Johnson (J&J)** announced it has completed the divestiture of its LifeScan business to **Platinum Equity** for approximately US\$2.1 billion. LifeScan is a blood glucose monitoring and maker of the OnTouch brand of products that generated a revenue of US\$1.5 billion in 2017
 - On October 9th, **Janssen Pharmaceuticals Companies** of J&J released new data on STELARA (Ustekinumab), a treatment for adult patients with moderate-to-severe ulcerative colitis. The treatment is currently approved in the U.S. for plaque psoriasis, Crohn’s diseases and psoriatic arthritis
 - On October 11th, J&J received approval from the FDA for a blood thinning tablet called Xarelto that claims to reduce risk of major cardiovascular events in patients with chronic coronary artery diseases or peripheral artery diseases

Relative Performance Index



Note 1: For the period October 1st to October 15th, 2018

US Healthcare Watchlist Constituents: Johnson & Johnson, Pfizer Inc., Roche Holding AG, Novartis AG, Merck & Co., Inc., AbbVie Inc., Amgen Inc., Medtronic plc, Gilead Sciences, Inc., Bayer AG, Abbott Laboratories, Bristol-Myers Squibb, GlaxoSmithKline plc, Eli Lilly and Company, AstraZeneca PLC, Celgene Corporation, Allergan plc, Boston Scientific Corporation, Mylan N.V., Teva Pharmaceutical Industries, Mallinckrodt Public Limited Company, Endo International plc

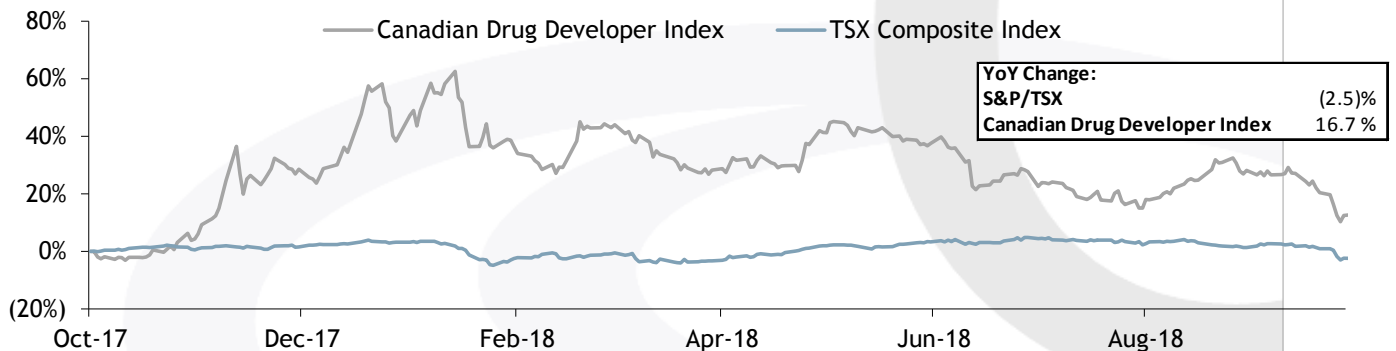


CANADIAN DRUG DEVELOPERS

News Scan¹

- Last twelve-month performance of the Canadian Drug Developers Index was an impressive 16.7%, significantly outperforming the TSX Composite Index which decreased 2.5% over the same period. In the news this month:
- On October 11th, **Oncolytics Biotech** announced the publication of an abstract on pelareorep, a drug it is currently developing. For treatment of the abstract has found that patients receiving the recommended phase 2 dose had a 50% response rate, and the progression free survival and overall survival have been significantly superior to past data. The company believes that these results make a compelling case for the potential of pelareorep for patients that otherwise have limited options for treatment
- On October 11th, **ProMIS Neurosciences** announced the identification of several potential antibody therapeutic candidates aimed at targeting toxic oligomers of a protein considered a root cause of Parkinson's disease. The company has retained **Red Sky Partners**, a Cambridge-based advisory firm, to support partnering efforts for its novel antibody candidates for PD
- On October 11th, **Tetra Bio-Pharma** announced that it received a response letter for a Type C meeting with the US FDA for the treatment of dronabinol AdVersa product (PPP002). The meeting held to confirm the proposed chemistry and manufacturing, and non-clinical development plan for PPP002 is acceptable. The company is able to move forward with executing its clinical program for PPP002 and to subsequently submit the New Drug Application to commercialize PPP002
- On October 10th, **Acerus Pharmaceuticals** announced that it has entered into a senior secured term loan facility with **SWK Funding** for up to US\$11 million. US\$9 million was available upon closing with the remainder set to become available upon satisfaction of future conditions
- On October 9th, **Arbutus Biopharma**, a leading Hepatitis B Virus therapeutic solutions company, provided an update on its key HBV development programs. Highlights include the progression of AB-506, which is set to be dosed in HBV patients this month, the delay of clinical trials for AB-452 and the progression of AB-729, which is set to start clinical trials in Q2 2019

Relative Performance Index



Note 1: For the period October 1st to October 15th, 2018

Canadian Drug Developers Constituents: ProMetic Life Sciences Inc., Clementia Pharmaceuticals Inc., Aurinia Pharmaceuticals Inc., Arbutus Biopharma Corporation, Resverlogix Corp., Aquinox Pharmaceuticals Inc., Zymeworks Inc., ImmunoVaccine Inc., InMed Pharmaceuticals Inc., Sierra Oncology, Inc., Tetra Bio-Pharma Inc., Oncolytics Biotech Inc., Cardiome Pharma Corp., Acerus Pharmaceuticals Corporation, ProMIS Neurosciences Inc., Aeterna Zentaris Inc., Trillium Therapeutics Inc.

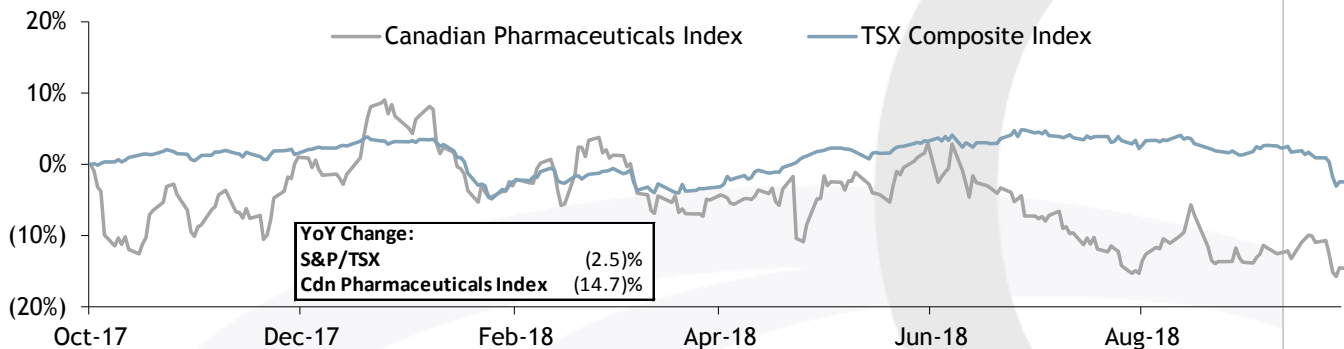


CANADIAN PHARMACEUTICALS

News Scan¹

- The Canadian Pharmaceuticals Index experienced a decline of 14.7% over the last twelve months, while the TSX Composite Index decreased 2.5% over the same period. Recent news highlights include:
- On October 9th, **Concordia International Corp** announced that it intends to change its name as part of a global rebrand in support of its new strategy and vision. The company intends to rebrand as **ADVANZ PHARMA** during Q4 of 2018. The company's new strategy is focused on providing greater access to medicines for patients and sustainable value for healthcare providers by using its strong financial position and supportive shareholder base
- On October 8th, **Bausch Health Companies** announced that its dermatology business, **Ortho Dermatologics** received tentative approval from the US FDA for its BRYHALI lotion. The final FDA approval is pending the expiration of exclusivity for a related product which is expected in early November 2018. Bausch plans to launch BRYHALI lotion shortly after in November 2018
 - On October 11th, **Bausch Health Companies** announced that it has published two results for its Phase 3 test of ALTRENO Lotion. The US FDA approved the New Drug application for ALTRENO in August 2018. The lotion was shown to have significantly greater efficacy compared in achieving treatment success, showing a two-grade improvement from baseline. The study showed that by week 12, 17.7% of patients achieved treatment success compared to 9.3% of patients receiving vehicle

Relative Performance Index



Note 1: For the period October 1st to October 15th, 2018

Canadian Pharmaceuticals Constituents: Bausch Health Companies Inc., Knight Therapeutics Inc., Concordia International Corp., Aralez Pharmaceuticals Inc., Theratechnologies Inc., Zomedica Pharmaceuticals Corp.

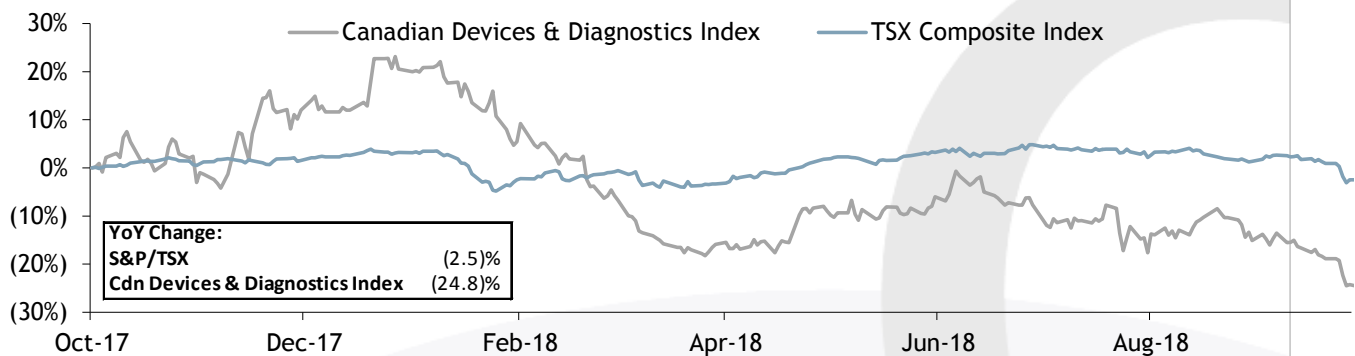


CANADIAN DEVICES & DIAGNOSTICS

News Scan¹

- The Canadian Devices & Diagnostics Index lost approximately 24.8% over the last twelve months, lagging the TSX Composite Index which fell by 2.5% over the same period. Newsmakers for October 2018:
- On October 4th, **Titan Medical** announced that it has achieved all of its publicly stated Q3 2018 development milestones for the SPORT Surgical System. The company has 2 major milestones remaining: Completion of the engineering for the improved system based on surgeon feedback and Peer-reviewed publications at key medical conferences including an assessment of the technical skills with the new SPORT system
- On October 10th, **Neovasc** announced that the US FDA has granted Breakthrough Device designation to the Neovasc Reducer, a medical device used for treatment of refractory angina. This status expedites the development and review of the device, and the company intends to work closely with the FDA through the regulatory process

Relative Performance Index



Note 1: For the period October 1st to October 15th, 2018

Canadian Devices and Diagnostics Constituents: CRH Medical Corporation, TSO3 Inc., Titan Medical Inc., Opsens Inc., Neovasc Inc., Relay Medical Corp., Profound Medical Corp., Covalon Technologies Ltd., Spectral Medical Inc., Hamilton Thorne Ltd.

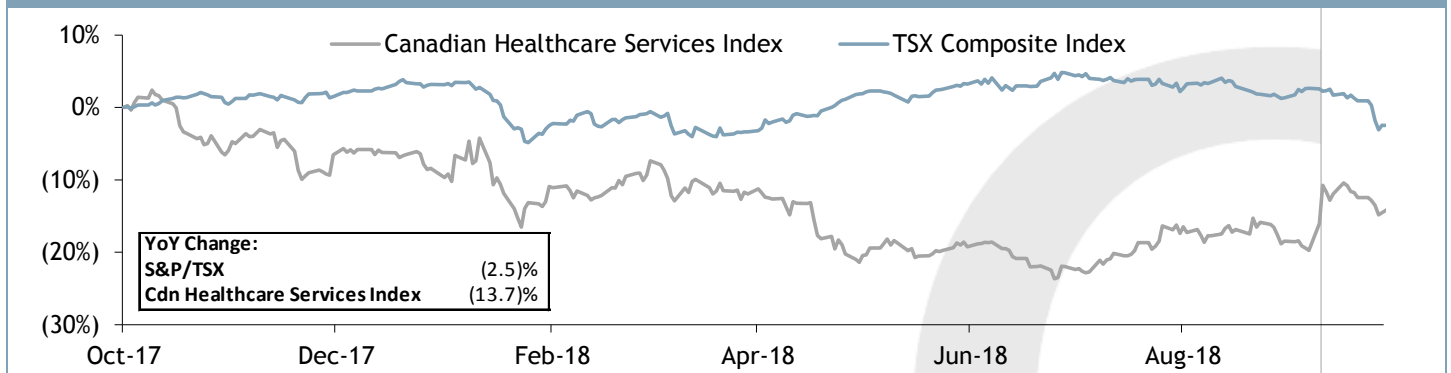


CANADIAN HEALTHCARE SERVICES

News Scan¹

- Last twelve-month performance of the Canadian Healthcare Services Index decreased 13.7%, while the TSX Composite Index fell by 2.5% over the same period. In August, the following occurred in the Canadian healthcare services space:
- On October 1st, **Nova Leap Health**, a provider of personal home care and support services, announced it has completed the acquisition of the business assets of **Comprehensive Home Care**, located in Deerfield, Massachusetts. Total consideration of \$1.6 million was paid with \$0.61 million in cash, a \$0.75 million demand loan and a \$0.24 million promissory note issued to the seller. The acquisition is expected to be immediately accretive and, when combined with Nova Leap's existing subsidiaries, is expected to result in excess of 550,000 forecasted annualized recurring client service hours

Relative Performance Index



Note 1: For the period October 1st to October 15th, 2018

Canadian Healthcare Services Constituents: Sienna Senior Living Inc., Extencare Inc., Medical Facilities Corporation, Akumin Inc, Centric Health Corporation

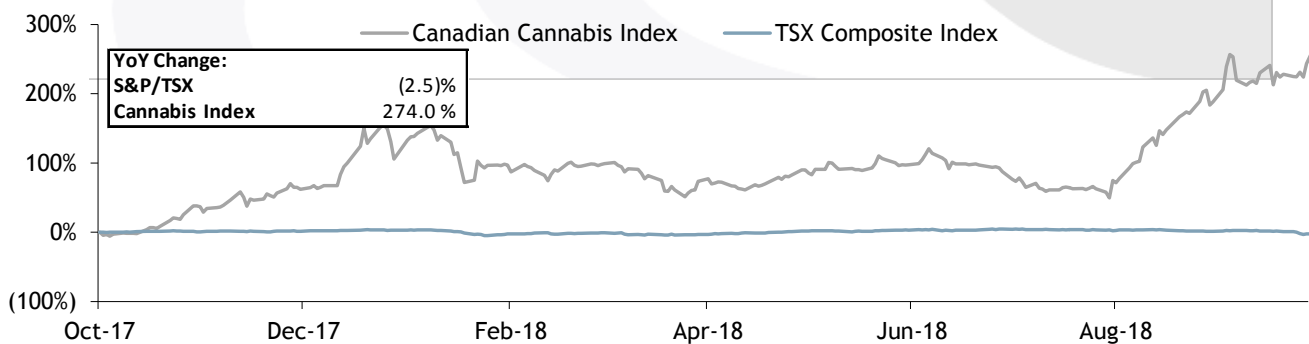


CANNABIS

News Scan¹

- With legalization tomorrow, the ACMPR has issued 129 licenses. Last twelve-month performance of the Cannabis index saw an increase of 274%, compared to the 2.5% decline of the TSX Composite Index over the same period. Highlights:
- On October 15th, **Wayland Group (formerly Maricann Group)** announced that it has entered into an agreement to supply **Cannamedical Pharma GmbH**, a German-based importer of medical cannabis, with a minimum of 9,000 kilograms of cannabis flowers over a three-year term
 - On October 11th, **Wayland Group** announced that it has raised US\$50.1 million in a bought deal financing. The company sold 30.35 million units of the company at a price of \$1.65 per unit. Each unit consists of one common share and one-half of one common share purchase warrant, with the warrants being exercisable at a price of \$2.15 for a period of 3 years
- On October 15th, **Aphria Inc.** announced that it has completed its first shipment of cannabis oil to its Argentina-based subsidiary, **ABP**. Aphria acquired ABP last month when the company closed its acquisition of **LATAM Holdings**
 - On October 12th, **Aphria** reported its Q1 2019 results with strong revenue growth figures. Revenues of \$13.3 million represented a 10% increase over the prior quarter's revenue and a 117% increase over the same period last year
- On October 15th, **Canopy Growth Corporation** announced that it has signed a deal to buy Ebbu Inc., a Colorado-based hemp researcher, in a stock-and-cash deal worth US\$425 million. Under the agreement, Canopy will pay \$25 million in cash and issue 6,221,210 shares to Ebbu. The company said the deal will help its hemp and THC-rich cannabis genetic breeding program, as well as other parts of the business
- On October 11th, **MedMen Enterprises** announced that it has entered into an agreement to acquire **PharmaCann LLC** for US\$682 million in an all-stock transaction. The resulting pro-forma company will have a portfolio of cannabis licenses in 12 states that will permit the company to operate 79 cannabis facilities
- On October 9th, **Aurora Cannabis** announced that it has filed an application to list its shares on the New York Stock Exchange (NYSE). The listing is subject to the approval of the NYSE and fulfillment of other regulatory requirements, but the company anticipates that trading will commence before the end of October
- On October 4th, **HEXO Corp.** and **Molson Coors Canada** announced that the two companies have closed the transaction announced in August to form a joint venture to pursue opportunities to develop non-alcoholic, cannabis-infused beverages for the Canadian market following legalization. The joint venture, Truss, will be led by former Molson Coors executive, Brett Vye
- On October 3rd, **CannTrust Holdings Inc.** announced that it reached a milestone of 50,000 medical cannabis patients, capturing 36% of all newly registered patients in Q3 2018.
 - On October 2nd, **CannTrust** announced the appointment of Peter Aceto as CEO, replacing Eric Paul, co-founder.

Relative Performance Index



Note 1: For the period October 1st to October 15th, 2018

Cannabis Index Constituents: Canopy Growth, Aurora Cannabis, Aphria, CannTrust Holding, Auxly Cannabis Group, OrganiGram Holdings, The Supreme Cannabis Company, The Hydrothecary, Tilray Inc.



Origin Merchant Partners

220 Bay Street, Suite 1500

P.O. Box 23

Toronto, Ontario

M5J 2W4

OMP Healthcare Team:

Cathy Steiner

Principal

T: 416-775-3602

Cathy.Steiner@originmerchant.com

Jim Osler

Principal

T: 416-800-0784

jim.osler@originmerchant.com

Jim Meloche

Principal

T: 416-800-0873

Jim.meloche@originmerchant.com